Claims

What is claimed is:

1. An optical send-receive module comprising:

a frame having a front, a back side, and a top section;

a lens carrier attached to the front of the frame, the lens carrier including a lens which faces forward;

an integrated circuit carrier placed within the top section of the frame;

first metal leads which electrically connect components within the lens carrier to an integrated circuit within the integrated circuit carrier; and,

second metal leads which extend from the integrated circuit carrier, along the top section of the frame, down the back side of the frame and extend under the frame.

2. An optical send-receive module as in claim 1, wherein the frame additionally includes:

first slots along the back side of the frame, the second metal leads being placed in the first slots.

3. An optical send-receive module as in claim 2, wherein the frame includes second slots along the top section, the ~~second~~ first metal leads being placed in the second slots.

4. An optical send-receive module as in claim 1, wherein the lens carrier is attached to the front of the frame so that a bottom of the lens carrier extends down below a bottom of the top section of the frame.

5. An optical send-receive module as in claim 1, wherein the lens carrier includes a first lens which houses a light emitting diode and a second lens which houses a photo diode.

6. A method for manufacturing an optical send-receive module comprising the following steps:

(a) forming a frame, the frame having a front section, a back side, and a top section;

(b) molding a lens carrier and a universal chip carrier, the lens carrier and universal chip carrier being co-planar and being connected by a first set of metal leads, a second set of metal leads extending out from the universal chip carrier; and,

(c) placing the lens carrier and the universal chip carrier within the frame, wherein the lens carrier is attached to the front section of the frame, and the first set of metal leads are bent so that a lens included within the lens carrier faces forward, and the second metal leads are bent so that they extend from the ~~integrated circuit~~ Universal chip carrier, along the top section of the frame, down the back side of the frame and extend under the frame.

7. A method as in claim 6 wherein:

step (a) includes forming first slots along the back side of the frame; and,

step (b) includes placing the second metal leads in the first slots.

8. A method as in claim 7 wherein:

step (a) includes forming second slots along the top section of the frame; and,

step (b) includes placing the first metal leads in the second slots.

9. A method as in claim 6 wherein step (c) includes attaching the lens carrier to the front section of the frame so that a bottom of the lens carrier extends down below a bottom of the top section of the frame.

10. A method as in claim 9 additionally comprising the following step:

(d) attaching the frame to a printed circuit board, the bottom of the top section resting on the printed circuit board, the front section extending over a side of the printed circuit board so that the bottom of the lens carrier extends down below a top of the printed circuit board.

11. A method as in claim 9 additionally comprising the following step:

(d) attaching the frame to a printed circuit board, the bottom of the top section resting on the printed circuit board, the front section extending down inside a cut out portion of the printed circuit board so that the bottom of the lens carrier extends down below a top of the printed circuit board.

12. A method as in claim 6 additionally comprising the following step:

(d) attaching the frame to a printed circuit board, the frame being flipped over so that a top of the top section rests on the printed circuit board.

13. A module used for wireless communication, the module comprising:

a frame having a front, a back side, and a top section;

a lens carrier attached to the front of the frame, the lens carrier including a lens which faces forward;

an integrated circuit carrier placed within the top section of the frame;

first metal leads which connect the lens carrier to an integrated circuit within the integrated circuit carrier; and,

second metal leads which extend from the integrated circuit carrier, along the top section of the frame, down the back side of the frame and are bent under the frame.

14. A module as in claim 13 wherein the frame additionally includes:

first slots along the back side of the frame, the second metal leads being placed in the first slots.

15. A module as in claim 14 wherein the frame includes second slots along the top section, the ~~second~~ first metal leads being placed in the second slots.

16. A module as in claim 13 wherein the lens carrier is attached to the front of the frame so that a bottom of the lens carrier extends down below a bottom of the top section of the frame.